LT. YUELLIG

REVISION

This is a revision

to AN 01-60GE-1

The attached pages supersede like pages of that Technical Order.

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PILOT'S FLIGHT OPERATING INSTRUCTIONS

FOR

ARMY MODELS

B-25J-1, -5, -10, -15, -20, -25

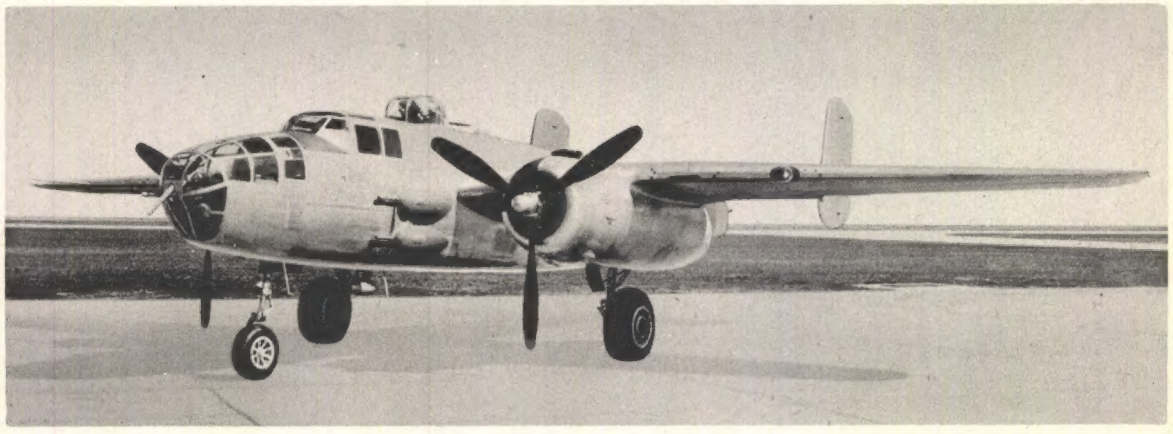
NAVY MODEL

PBJ-1J

BRITISH MODEL

MITCHELL III

AIRPLANES



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General.

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LIST OF REVISED PAGES ISSUED

NOTE: A heavy black vertical line, to the left of the text on revised pages, indicates the extent of the revision. This line is omitted where more than 50 percent of the page is revised.

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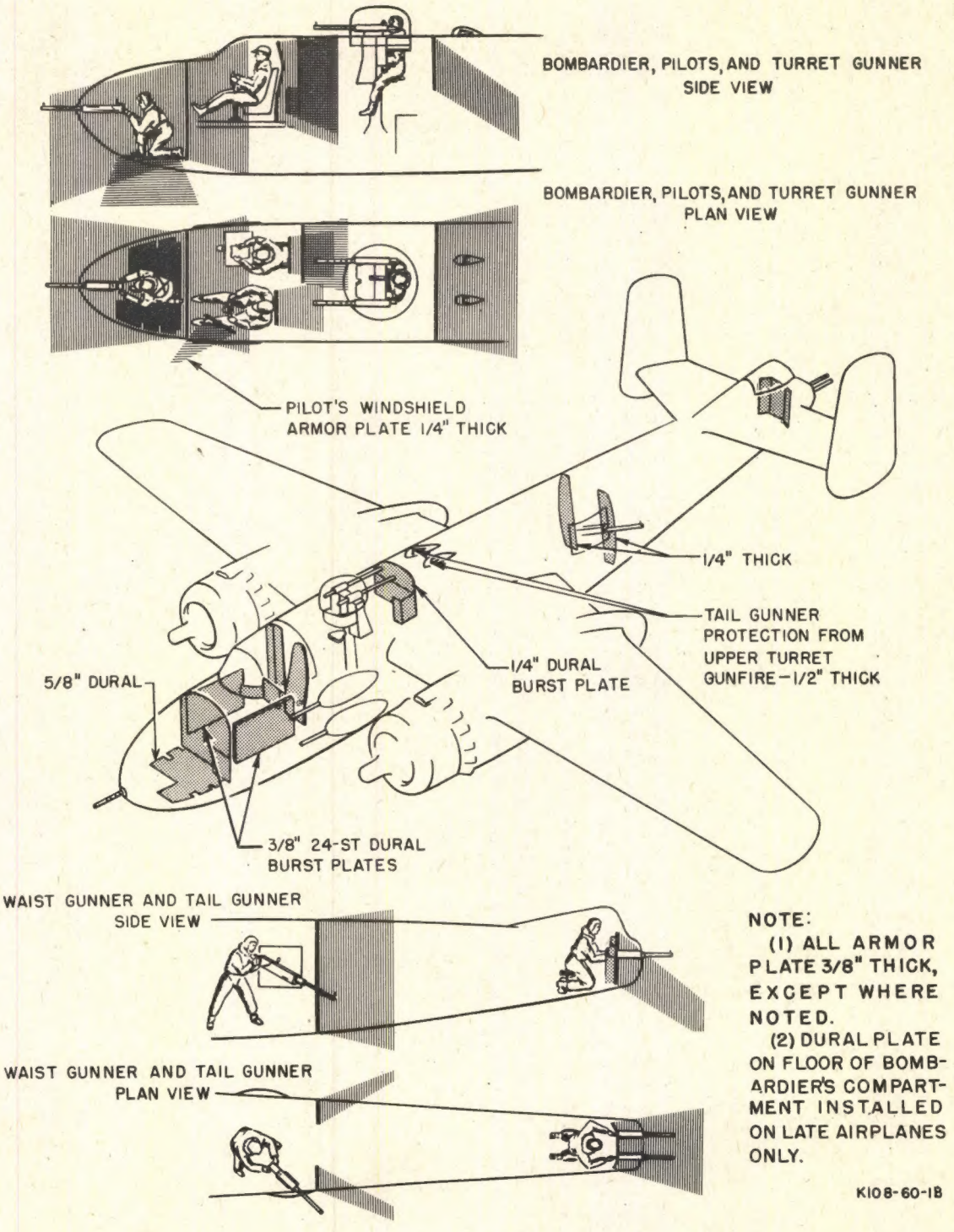

Figure 5—Armor Protection

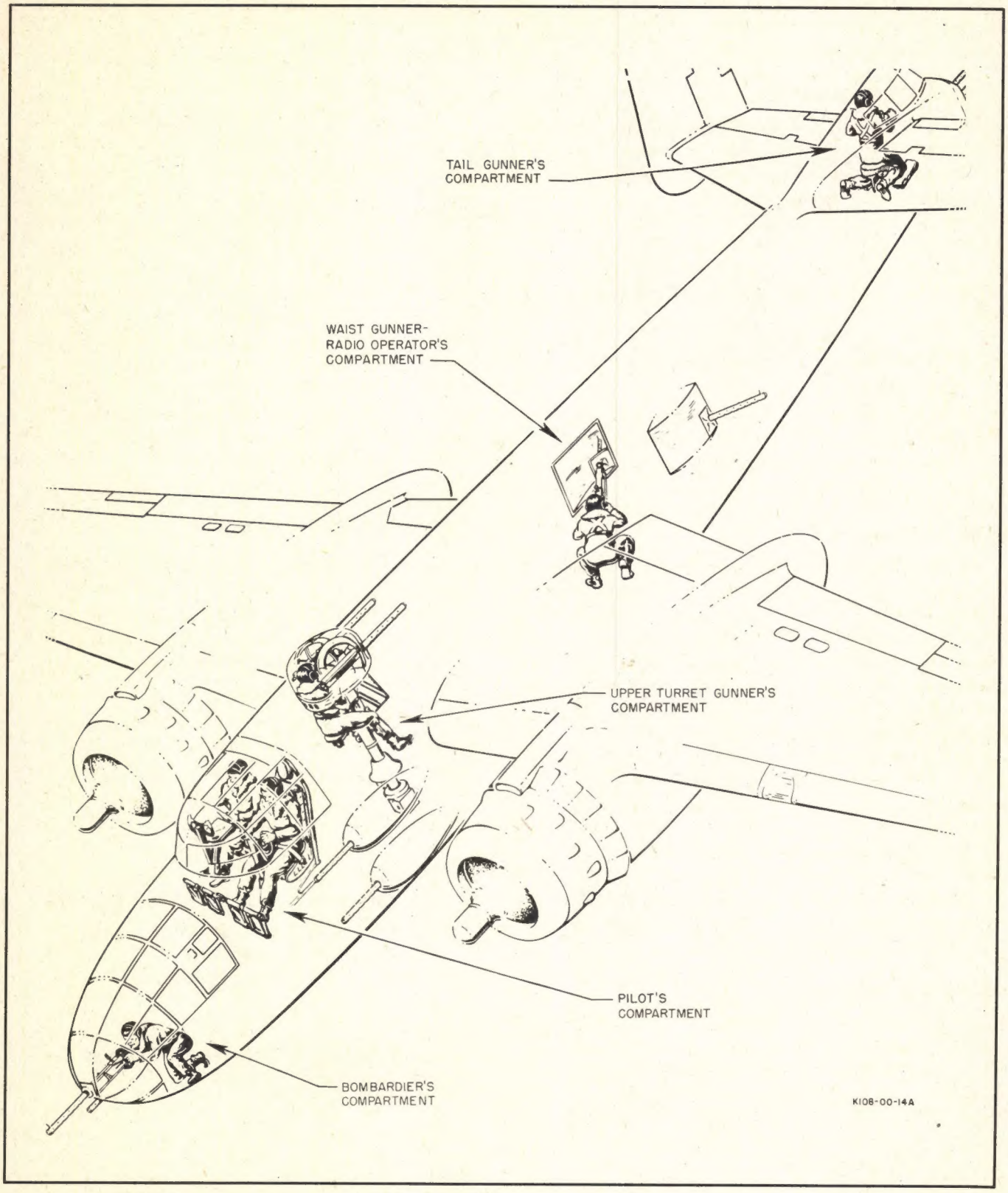

Figure 6—Fuselage Arrangement

of the wheel. The nose wheel may be released from the shimmy damper for towing purposes.

5. WHEELS AND BRAKES.

The wheels are of the smooth-contour type. The nose wheel tire is equipped with a dual-seal inner tube for protection against a blowout or puncture, and on late airplanes, a channel tread tire is mounted on the nose wheel. The main wheels are equipped with dual multiple-disc hydraulic brakes. On early airplanes, an air brake system is provided for use in the event of a complete hydraulic failure. Late airplanes are equipped with an emergency hydraulic brake system.

6. HYDRAULICS.

a. NORMAL.—A single high-pressure hydraulic system operates the tricycle landing gear, wing flaps, engine cowl flaps, bomb bay doors, and brakes. On late airplanes, the carburetor air induction system is hydraulically operated. If one of the engine-driven hydraulic pumps fails, the other will provide sufficient pressure for the operation of the hydraulic system.

b. EMERGENCY.—An emergency hydraulic system permits operation of the system even though both engine-driven pumps fail, or with the airplane on the ground and the engines inoperative. The hand-pump and selector valve are at the right of the pilot's seat. A separate hydraulic system provides for the emergency lowering of the landing gear in the event of complete failure of the general system, with loss of fluid. Emergency mechanical systems are provided for the operation of the wing flaps and bomb bay doors. A small reserve of fluid is retained under pressure in the accumulator for use if the engine pumps fail. This reserve is not adequate for completely raising or lowering the landing gear, but is sufficient for a one-way operation of the wing flaps, engine cowl flaps, or the bomb bay doors. The brake accumulator retains sufficient pressure for approximately three brake pedal applications (both wheels) even though both engine pumps should fail.

7. POWER PLANT.

a. ENGINES.—The airplane is powered by two Wright R-2600-13 or R-2600-29, air-cooled, 14-cylinder engines. Low gear supercharger ratio is 7.06:1 and high gear ratio is 10.06:1. The propeller gear ratio is 16:9. Engine equipment includes a Holley carburetor incorporating an electric primer valve. Individual flame-damping exhaust stacks reduce glare during night flying.

b. FUEL AND OIL.

Fuel	Spec. No. AN-F-28, Grade 100/130
Oil	Spec. No. AN-VV-O-446a, Grade 1120

Note

Under certain conditions when the airplane is within the continental United States, Spec. No. AN-F-26, Grade 91 fuel should be used.

c. CARBURETOR HEAT.—On early airplanes, warm air from around the cylinder heads is utilized for carburetor heat. On late airplanes, the exhaust from cylinders No. 3 and No. 13 may be introduced into the induction system. The carburetor air controls on all airplanes have two positions, "NORMAL" and "ICING." On late airplanes, it is necessary to move the controls back to neutral after the desired amount of heat rise is obtained. There is a power loss of approximately ten per cent when the engines are run at full power with the exhaust scoops in the full open position, due to the induction of exhaust gases. Each air scoop is equipped with a filter which may be replaced with a baffle when necessary.

Note

Unfortunately, the impression exists among some mechanics and pilots that the carburetor air filter causes a serious loss in airplane performance. The effect of installing a filter is merely equivalent to closing the throttle slightly. This means that for all altitudes less than critical, where manifold pressure limits prevent full throttle opening, the filter has no effect on engine power output or airplane performance. Manifold pressure affords the best indication of engine power, and at a given manifold pressure the engine will develop the same power regardless of whether or not a filter is installed. The only time that airplane performance would benefit from removal of the filter is when the throttle is fully open and still more manifold pressure would be permissible. With the filter installed, only cold ram air passes through the filter element.

d. PROPELLER.—The Hamilton Standard Hydromatic full-feathering constant speed propellers have a blade diameter of 12 feet 7 inches and are controlled by double-capacity governors which are set by means of levers on the pilot's control pedestal. The electrically driven feathering pumps are controlled by two push buttons on the control pedestal switch panel. Propeller pitch settings are 22° low and 90° high.

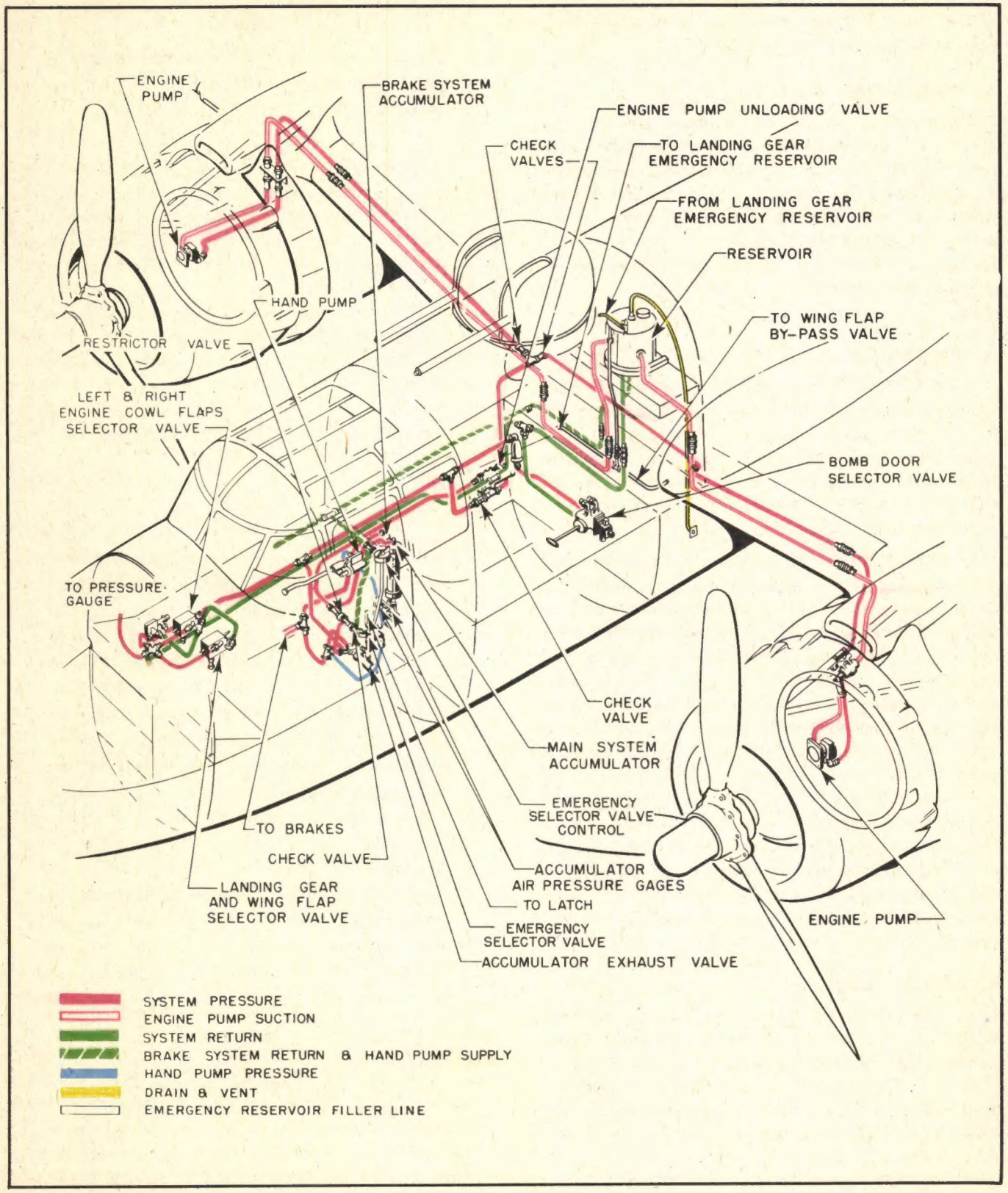

Figure 7—Hydraulic Power System

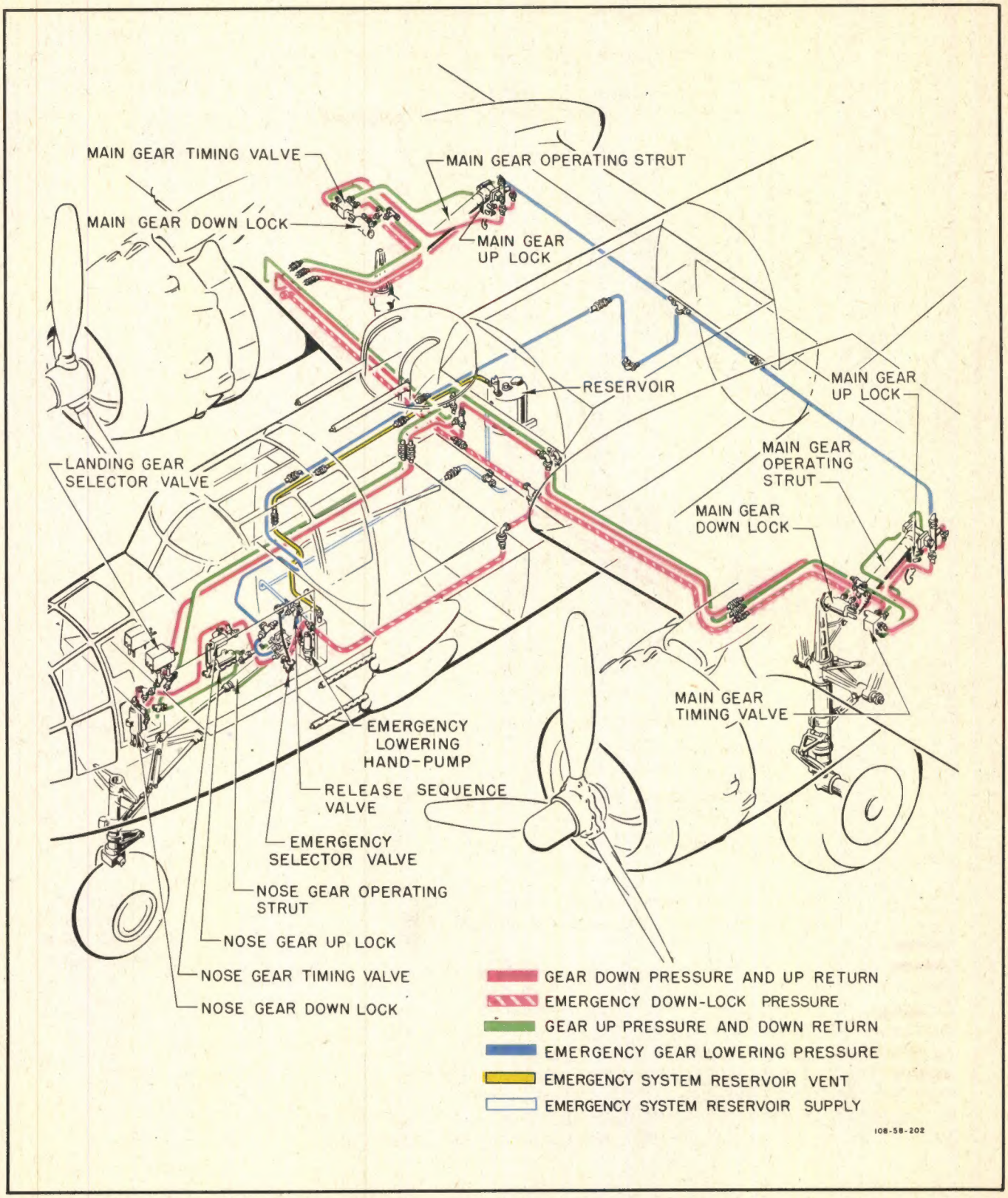

Figure 8—Hydraulic Landing Gear System

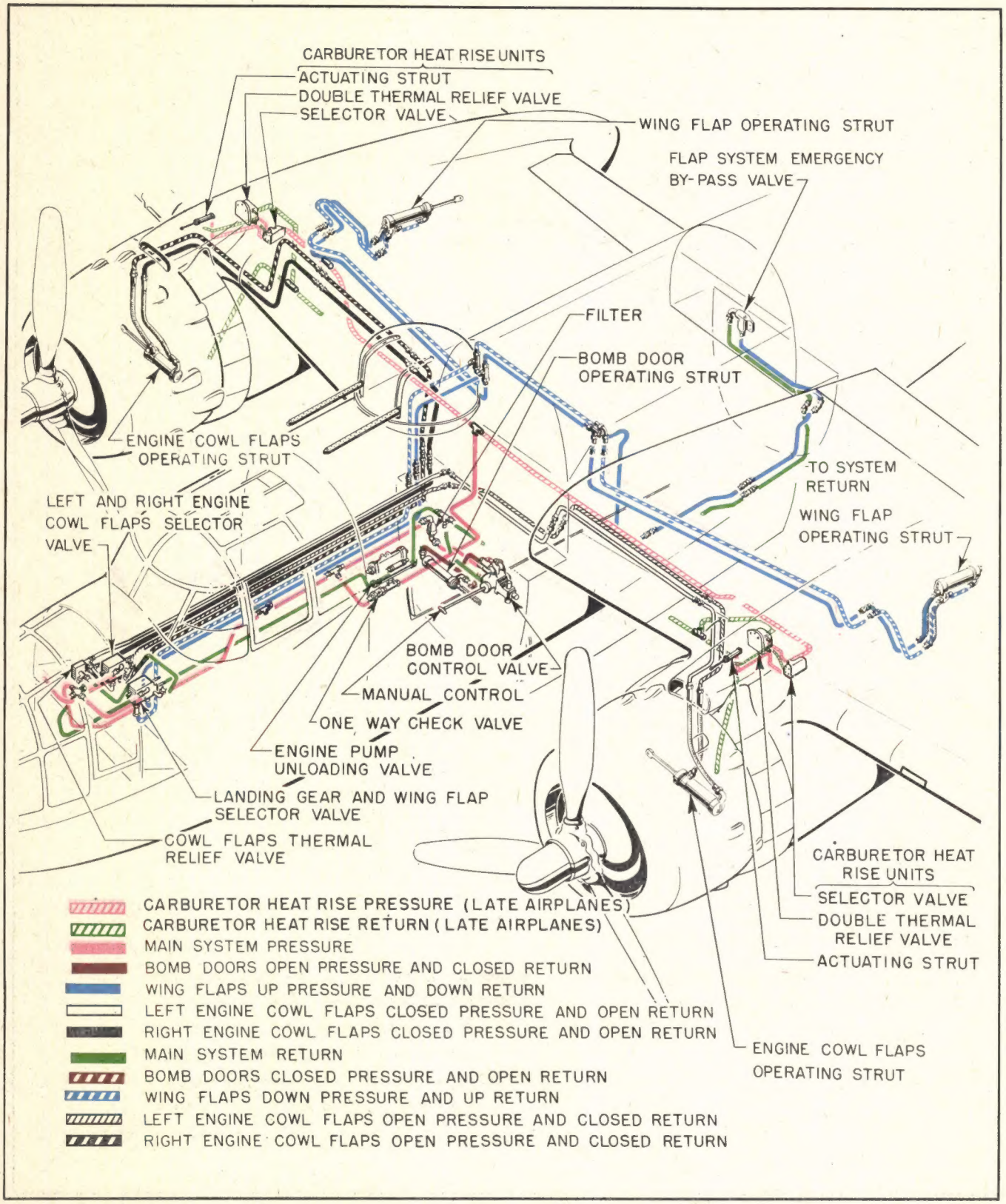

Figure 9—Hydraulic System—Wing Flaps, Cowl Flaps, Bomb Doors, and Carburetor Air Doors

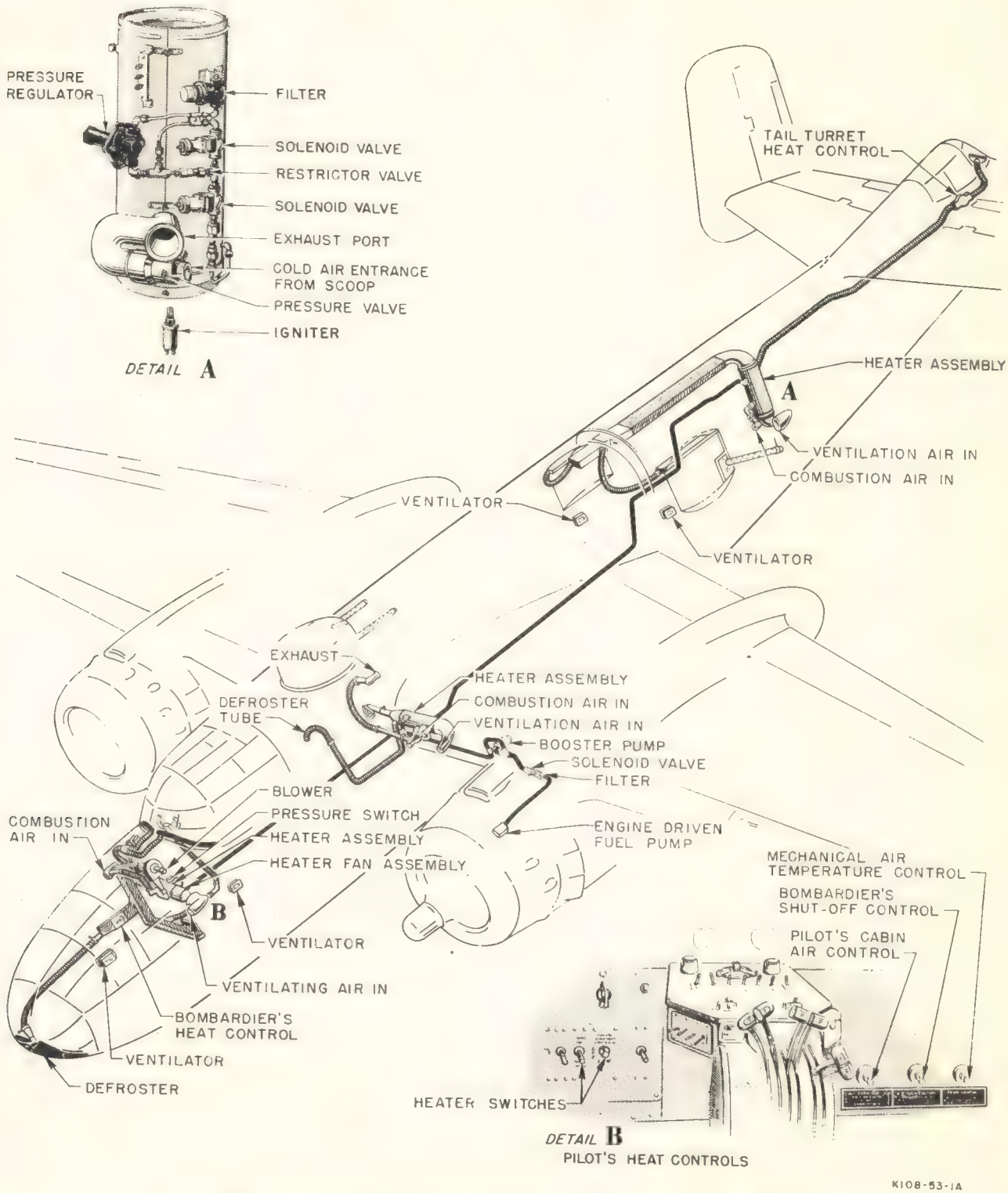

Figure 17A—Heating and Ventilating System (Late Airplanes)

parent parts of the bombardier's and pilot's compartments, the upper turret, the waist gunner's windows, and the tail gunner's station.

d. BLIND-FLYING HOOD.—On early airplanes only, a cloth hood may be suspended from the top of the pilot's enclosure during instrument-flying maneuvers. When not in use, the hood is stowed in a canvas bag underneath the shelf on the left side of the upper turret gunner's compartment.

e. MISCELLANEOUS.—On late airplanes, resin tail light lenses, reconnaissance flares, flame floats, and drift markers are stowed on the left side of the fuselage aft of the rear entrance hatch.

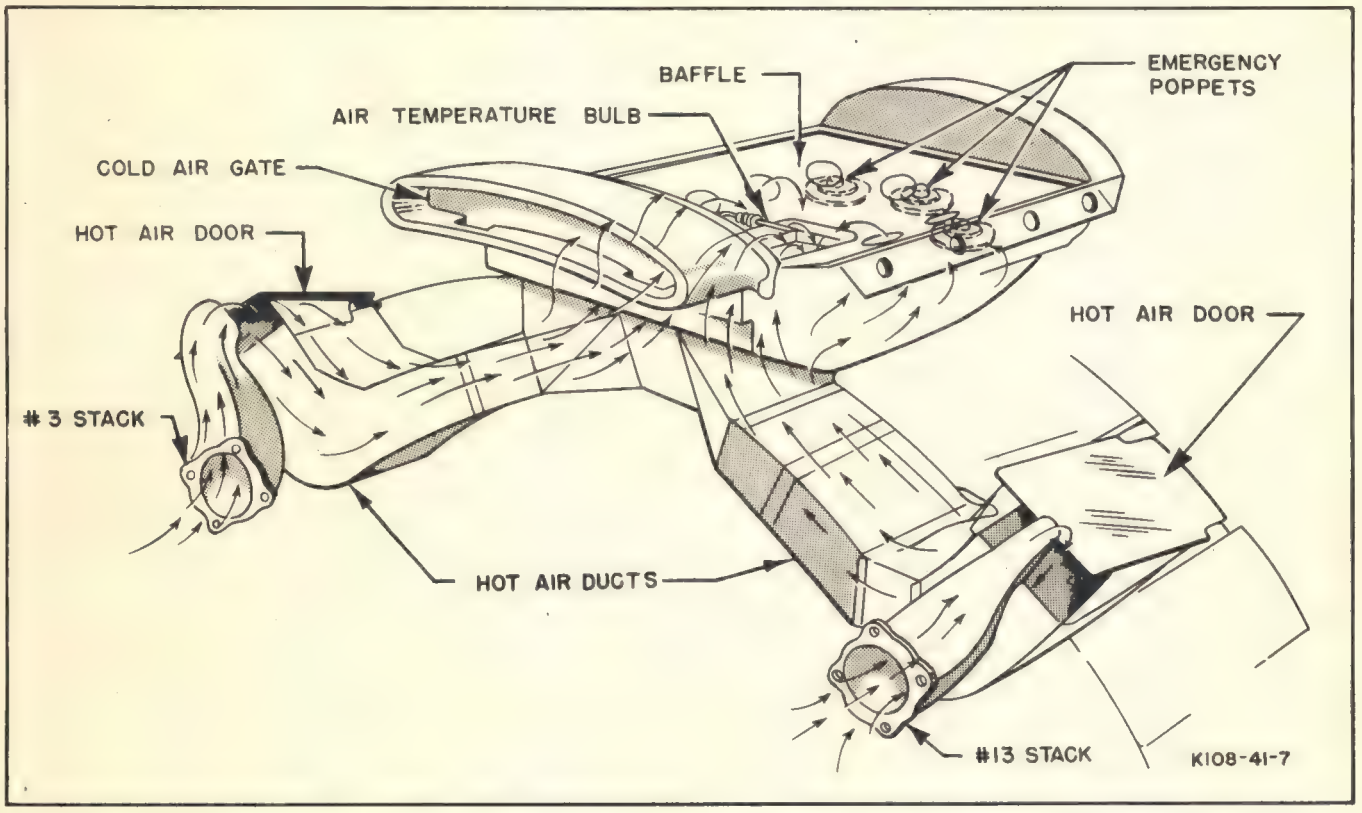

Figure 17B—Carburetor Air Induction System—Late Airplanes

Figure 26—Control Pedestal Switch Panel

(7) Open cowl flaps; then place controls in neutral.

Note

Always return the cowl flap controls to neutral position immediately after obtaining the desired position of the flaps. In this position, fluid will not be pumped overboard should a cowl flap line break.

(8) On early airplanes, move carburetor air controls to "NORMAL." On late airplanes, see that carburetor air controls are in neutral position, and visually check to see that carburetor air scoop gates are open and that exhaust scoops are closed.

(9) Check emergency fuel shut-off valve controls "ON."

(10) If external power supply is not connected turn "ON" the battery-disconnect switches, located on the pilot's switch panel *(see figure 20)*.

(11) Turn "ON" the fuel booster pump switches, located on the control pedestal switch panel *(see figure 26)*. Check the fuel pressure gage for 4 to 5 lbs./sq.in. pressure.

(12) Turn "ON" the ignition safety switch, located on the pilot's control pedestal.

(13) Turn the ignition switch for the engine to be started first to the "BOTH" position.

(14) Press starter energizing switch on control pedestal switch panel to "LEFT" or "RIGHT," depending on which engine is being started first, and hold in place for a maximum of 10 seconds when using an external power source (battery cart), or 20 seconds when using the airplane's batteries.

Note

Whenever possible, an external power supply should be used to start the engines. If external power is not available, use a portable energizer or handcrank. Do not use airplane's batteries to start engines except in an emergency.

(15) While energizing, prime engine 2 seconds.

(16) Check to see if propeller is clear.

(17) Press mesh switch to "LEFT" or "RIGHT," depending on which engine is being started first. Prime the engine while engaging until it fires evenly.

(18) As engine starts, move mixture control to "FULL RICH."

(19) Check oil pressure. If pressure is not up to 40 lbs./sq.in. within 30 seconds, stop engine and investigate.

(20) Follow procedures (2) and (13) through (19) for starting other engine.

6. ENGINE WARM-UP.

a. Warm engine at 1200 rpm until oil temperature shows a definite increase and oil pressure remains steady when throttle is opened.

b. The gyro instruments should be uncaged at all times except during maneuvers which exceed operating limits.

Note

If horizon bar on flight indicator is not level after engines are started, cage, then immediately uncage gyro at least 5 minutes before take-off.

c. If outside air temperature is below −23°C (−10°F), use carburetor heat to maintain smooth engine operation.

7. EMERGENCY TAKE-OFF.

Use oil dilution to obtain proper oil pressure at moderate power, and as soon as the engine will take the throttle, taxi out and take off. Apply throttle slowly but steadily.

WARNING

Overdilution may easily result in very low oil pressure after the engine is warm; therefore, dilution should be used carefully.

8. ENGINE AND ACCESSORIES GROUND TEST.

a. After starting, engines should be warmed up and ground tested as follows:

(1) Turn booster pumps "OFF" and check for a fuel pressure of 6 to 7 lbs./sq.in.

(2) Check propeller controls at 1600 rpm by pulling controls back to full "DECREASE RPM" and noting rpm drop of approximately 350 to 400 rpm. Return controls to full "INCREASE RPM."

(3) Check "L" and "R" magnetos at 2000-2100 rpm, maximum manifold pressure, 28.5 in. Hg—maximum rpm drop 75. If rpm drop is greater, return switch to "BOTH," run engine to 40 in. Hg manifold pressure for a few seconds and then recheck at 2000-2100 rpm.

(4) At 700 rpm, check "OFF" position of ignition switches.

(5) Check supercharger clutch operation; with propeller at full "INCREASE RPM," engine speed at 1700 rpm, set supercharger to "HIGH" blower. Open throttle to 30 in. Hg maximum manifold pressure, and shift to "LOW" blower. Manifold pressure should show a sudden decrease of not less than 1½ in. Hg.

(6) Check operation of cowl flaps and wing flaps.

(7) At 1600 rpm, check voltage at 28-28.5, amperes 20-60 per generator, and suction 3.75-4.25 in. Hg.

(8) Check hydraulic pressure (800-1100 lbs./sq.in.).

(9) Check brake pressure (1000-1200 lbs./sq.in.).

(10) Check communication equipment for proper operation.

(11) Check with crew members to see that entrance hatches are closed.

9. TAXIING.

a. GENERAL.—When taxiing, the airplane must begin to roll freely from its stationary position before any attempt is made to change direction. No turn should be attempted until the initial direction has been determined by "giving the airplane its head" through the even application of the engines without the use of brakes.

Note

This restriction is necessary because of the excessive side loads developed in the nose wheel assembly.

b. TURNS IN MUD OR SAND.—While taxiing in mud or sand, turn the airplane by moderate use of the brakes and engines, avoiding pivoting on one wheel. The minimum radius of turn of the inside wheel can be approximately 10 feet. When attempting to straighten the airplane out of a turn, it will be found that the nose wheel has less tendency to trail properly as the depth of the tire sink (depth of rut) increases.

c. NOSE WHEEL TURN INDICATOR.—An indicator containing two warning lights is installed on the instrument panel. These lights serve to warn the pilot when the nose wheel is turned beyond 15 degrees in either direction. Their action is fully automatic. The brilliancy of the lights may be adjusted by twisting the jewel light caps to "DAY" or "NITE."

Note

Upon reaching the take-off position, stop the airplane cross-wind so that approaching airplanes may be plainly seen.

10. BEFORE TAKE-OFF.

a. Check the following:

(1) Cabin heat switch "OFF."

(2) Turrets pointing directly aft; waist guns stowed.

(3) Check flying controls for free movement (watch control surfaces).

(4) Check elevator, aileron, and rudder trim. *(See figure 3-31 and figure 27.)*

(5) Generator and inverter switches "ON."

(6) De-icer control "OFF" if de-icers are installed.

(7) Check fuel levels.

(8) Fuel booster pumps "ON." Fuel pressure 6-7 lbs./sq.in.

(9) Propeller full "INCREASE RPM."

(10) Mixture "FULL RICH" (lock snug).

(11) Supercharger "LOW" (locked).

(12) If outside air temperature is below −23°C (−10°F), use carburetor heat to maintain smooth engine operation.

(13) Cowl flaps "OPEN" (control neutral).

(14) Emergency hydraulic selector valve "NORMAL."

(15) Emergency brake control safetied. Air pressure 550-600 lbs.

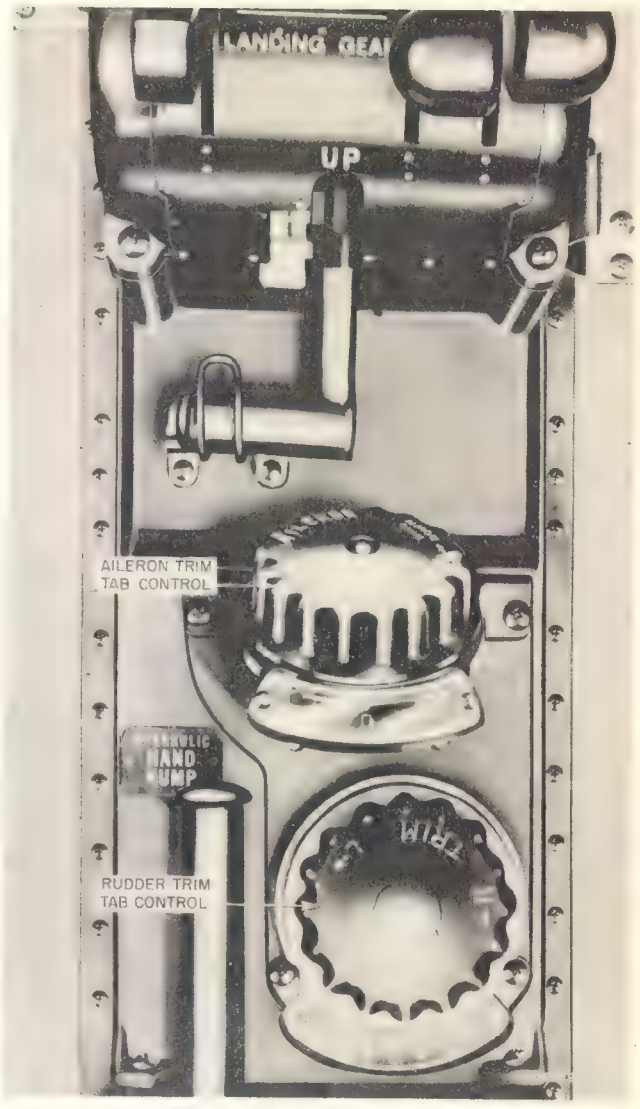

Figure 27—Aileron and Rudder Trim Tab Controls

(16) Pilot's static pressure selector valve "AIRSPEED TUBE" position.

11. TAKE-OFF.

a. When the field is clear, quickly check the following:

(1) Wing flaps 20° down for normal take-off, 30° down for obstacle clearance (control neutral), or as conditions dictate.

(2) Cylinder temperature 260°C (500°F) maximum for 5 minutes.

(3) Oil pressure 75-90 lbs./sq.in.

(4) Oil temperature 40°C (104°F) minimum, 95°C (203°F) maximum.

b. Open throttles to 44.3 in. Hg manifold pressure at 2600 rpm, and take off (5 minutes maximum).

WARNING

When airplane is serviced with fuel, Grade 91, Spec. No. AN-F-26, operate engines within limits specified on decal on pilot's control column.

12. ENGINE FAILURE DURING TAKE-OFF.

a. The chances of an engine failure during take-off can be greatly reduced if the engines are run up carefully and checked thoroughly before take-off.

b. The hazards due to engine failure during take-off can be minimized by observing the following practices:

(1) Hold airplane down after take-off in order to reach single-engine control speed as soon as possible. At take-off power the minimum single-engine control speeds are approximately as follows:

Right engine inoperative: 133 mph (IAS)
Left engine inoperative: 145 mph (IAS)

(2) Retract the landing gear as soon as the airplane is definitely airborne.

(3) Retract flaps as soon as the airplane reaches a safe altitude.

c. If an engine fails during take-off, the pilot must at once decide whether he can feather the propeller on the inoperative engine and continue flight, or should cut the good engine and land straight ahead. The decision to continue flight will be based upon the following factors:

(1) AIRPLANE SPEED. — Minimum single-engine control speed must be obtained. (See paragraph *b.* (1).)

(2) AIRPLANE CONFIGURATION. — No climb is possible unless gear is retracted, and the propeller on the inoperative engine is either feathered or set at full "DECREASE RPM." Climb performance is improved by clos-

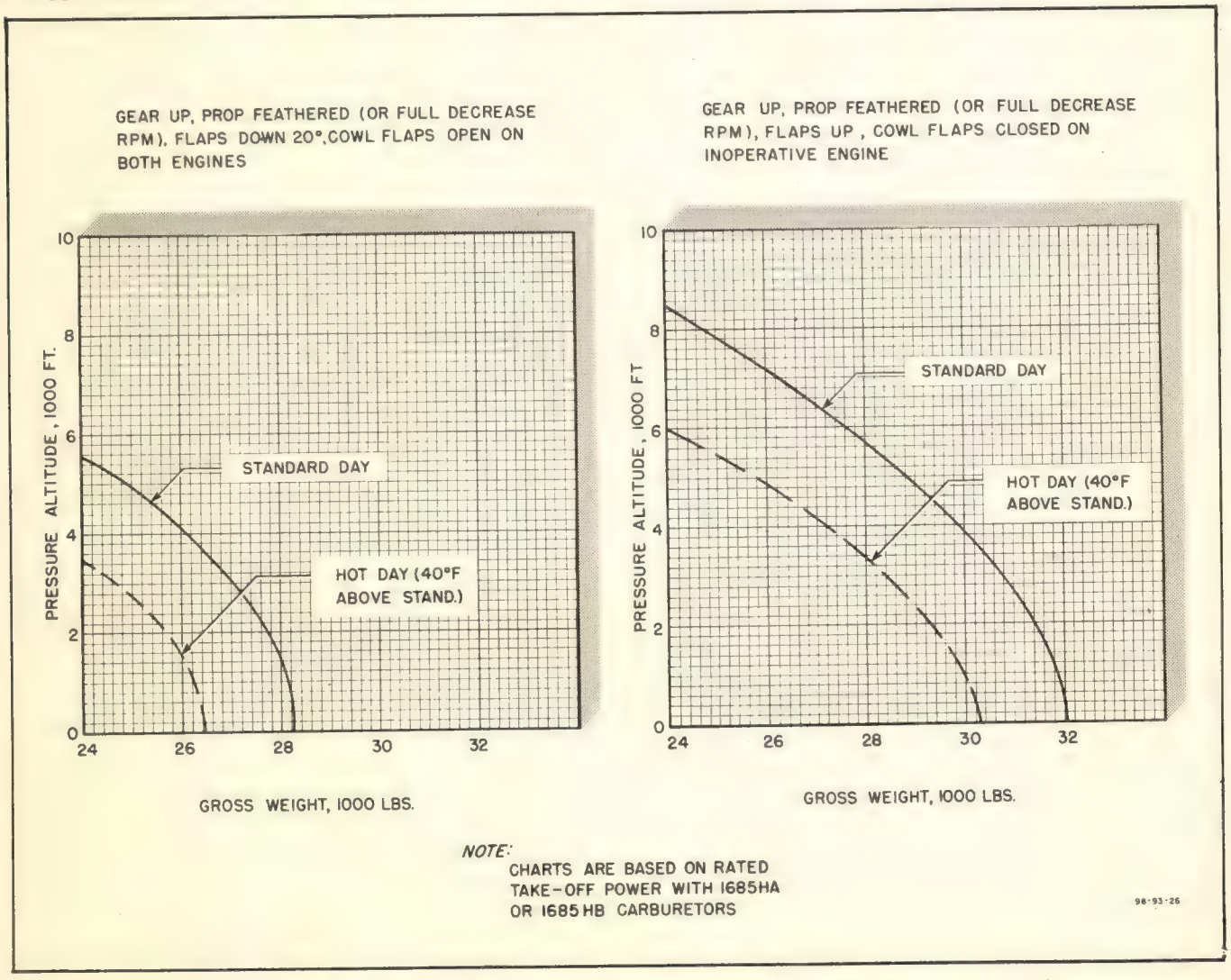

Figure 27A—Single-Engine Operation Chart (Service Ceiling vs. Gross Weight)

Voltage	28-28.5
Suction	3.75-4.25 in. Hg

(3) When altitude warrants, shift supercharger from "LOW" to "HIGH" at 1700 rpm. In prolonged flight in "HIGH" ratio, shift to "LOW" ratio every 2 hours for 15 minutes to remove sludge from clutch.

(4) During cruising operation with outside air temperature below −23°C (−10°F), use carburetor heat to ensure smooth engine operation.

(5) For engine operation, see Specific Engine Flight Chart, Section III, and charts in Appendix II.

b. POWER SURGE LIMITATIONS. — Carburetor metering tests have shown that the maximum power for cruising lean operation of the R-2600-29 engine with the 1685 HB carburetor is limited by power surge. The surge limits, which vary with rpm and altitude, are given in the following table:

HIGHEST ALLOWABLE MANIFOLD PRESSURES AT RPM AND ALTITUDE NOTED FOR CRUISING LEAN OPERATION

This table is applicable to the R-2600-29 engine—1685 HB carburetor combination.

	HIGH BLOWER			LOW BLOWER				
RPM	18,000 Feet Alt.	15,000 Feet Alt.	12,000 Feet Alt.	15,000 Feet Alt.	12,000 Feet Alt.	10,000 Feet Alt.	8000 Feet Alt.	5000 Feet Alt.
2100	* 29.5″	* 29.5″	* 29.5″	21.8″	25.3″	28.3″	* 28.5″	* 28.5″
2000	28.6″	* 29.5″	* 29.5″	21.4″	24.6″	27.0″	* 28.5″	* 28.5″
1900	26.2″	28.6″	* 29.5″	21.0″	23.8″	25.8″	* 28.5″	* 28.5″
1800	22.9″	27.0″	29.7″	Not Flyable	22.8″	24.8″	28.4″	* 28.5″
1700	Not Flyable	25.9″	29.1″	Not Flyable	21.8″	24.3″	27.2″	* 28.5″
1600	Not Flyable	23.6″	28.2″	Not Flyable	20.8″	22.8″	26.2″	* 28.5″

* The manifold pressures thus marked are maximum values allowable in agreement with the specific engine flight chart, Fig. 30. All other values listed represent the maximum power obtainable as limited by power surge.

15. ENGINE FAILURE DURING FLIGHT.

For information on this subject, see Section IV, paragraph 3.

16. GENERAL FLYING CHARACTERISTICS.

The general flying characteristics of the airplane are conventional, and no special emphasis need be placed on any particular normal condition of flight. The normal accepted technique and procedure governing the flying of twin-engine bombardment aircraft should be adhered to.

17. STALLS.

The airplane has excellent stall characteristics. The stalls are not violent and recovery can be made simply by dropping the nose of the airplane. A slight rolling tendency is easily counteracted by the application of opposite aileron control or a slight amount of rudder. The stalling characteristics of the airplane are not affected by changes of the gross weight, the setting of the wing flaps, or the operation of the de-icer shoes. The stalling speed, however, is affected by these variables *(see figure 29)*. The application of power tends to reduce the stalling speed further, dependent upon the amount of power used, the thrust component of which is converted into lift. A warning is given several miles per hour above the actual speed of the stall by a slight buffeting on the elevator and the horizontal stabilizer. There is no reversal of elevator force during the stall.

18. SPINS.

Recovery from spins is accomplished in the conventional manner.

19. DIVING.

The maximum indicated diving airspeed is 340 mph at normal gross weight. Recovery from dives should not be too abrupt in order to avoid placing excessive load factors on the structure. Dives and subsequent pull-outs should be tempered in accordance with the roughness of the air and the gross weight of the airplane.

20. NIGHT FLYING.

a. In flying this airplane at night, the sequence outlined for daylight operation should be even more strictly observed. In addition, the pilot and crew members should familiarize themselves with the location of the different lights and their control switches.

(1) INSTRUMENT LIGHTING. — Turn on the fluorescent lamps by turning the rheostat knobs (on the side of each control column) to "START" until the light comes on; then switch to either "ON" or "DIM" position. Rotating

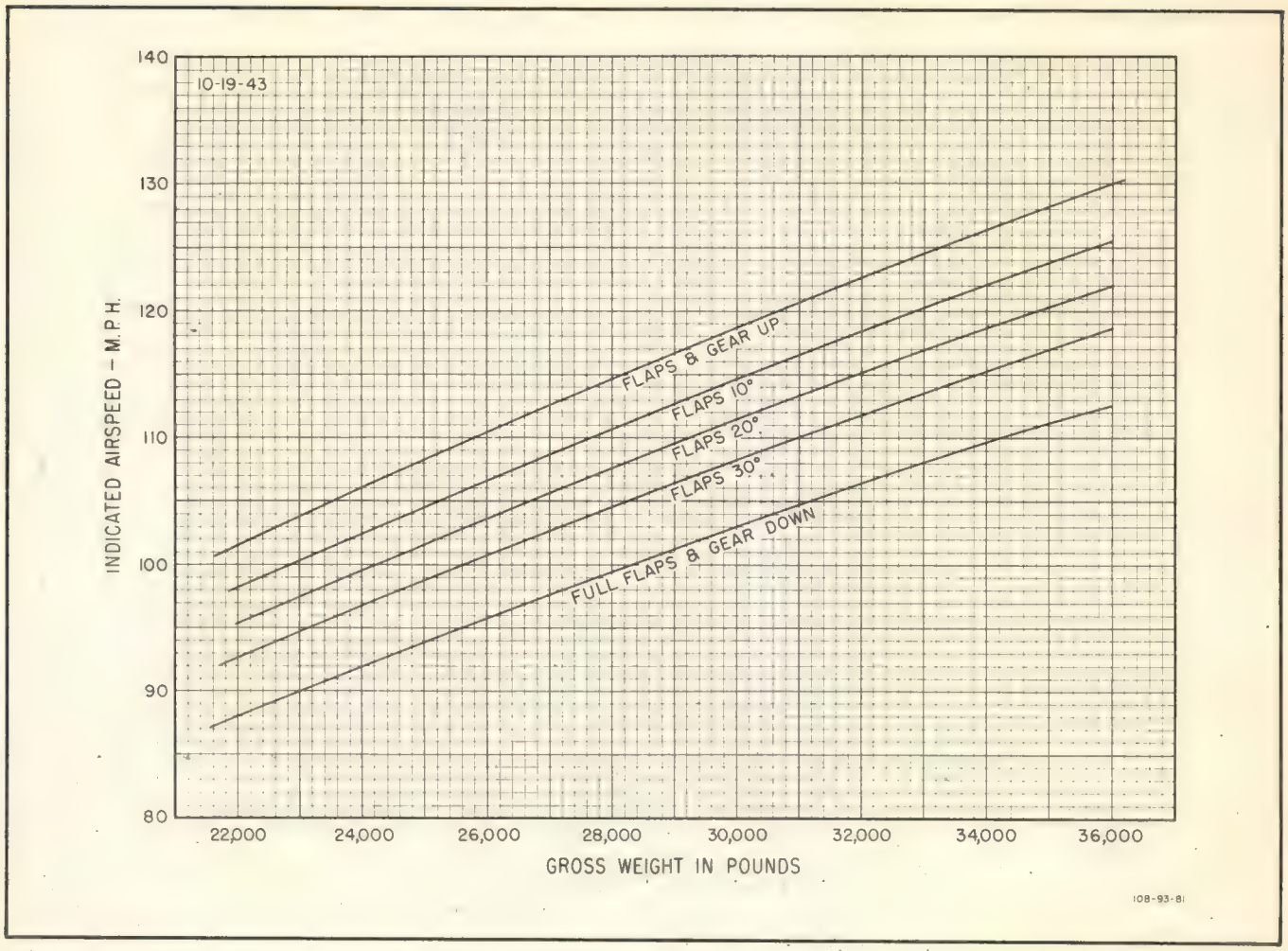

Figure 29—Stalling Speed Chart

the lens housing selects the visible or invisible illumination for the instruments.

(2) COCKPIT EXTENSION LIGHT.—An extension light with a six-foot cord is mounted on the right-hand instrument subpanel for use when a small amount of light is desired.

(3) POSITION LIGHTS.—The position light switches are on the pilot's switch panel *(see figure 20)*. Two intensities of light are available: "BRIGHT" and "DIM."

(4) LANDING LIGHTS.—Switches for the landing lights are located on the control pedestal switch panel.

(5) RECOGNITION LIGHTS.—Set the switches, located on the control pedestal switch panel, for the light or combination of lights desired. Place the switches in "STEADY" position for continuous operation and in "KEY" position for intermittent operation by means of the keying switch located directly above the bank of four recognition light switches.

21. APPROACH AND LANDING.

a. APPROACH.—When the airplane approaches the field, this sequence of operations should be followed:

(1) De-icer control "OFF."

(2) Turrets pointing directly aft; waist guns stowed.

(3) Fuel booster pumps "ON."

(4) General hydraulic pressure 800-1100 lbs./sq. in.

(5) Brake pressure 1000-1200 lbs./sq. in.

(6) Set propeller controls at 2100 rpm.

(7) Set mixture controls at "FULL RICH" (lock snug).

(8) Set supercharger controls in "LOW" (lock).

(9) Close cowl flaps (controls neutral).

(10) When outside air temperature is below −23°C (−10°F), use carburetor heat to ensure smooth engine operation.

(11) Lower landing gear to down position and lock. Do not lower gear above 170 mph. Check position of gear by indicator and warning light.

Note

An inspection hole is provided on the right side of the crawl tunnel just aft of the bombardier's compartment for the purpose of checking visually that the nose gear is down and locked.

(12) Master cabin heat switch "OFF."

(13) **Lower wing flaps. Leave handle in "DOWN" position.**

WARNING

Do not exceed 170 mph with flaps down. If landing is not made, raise flaps slowly after sufficient altitude and speed are obtained.

b. LANDING.

(1) Having turned into the field and lowered the flaps, maintain a correct gliding speed. Adjust the elevator trim tabs to assist in landing. Having slowed down after landing, raise the flaps and turn "OFF" the fuel booster pumps. Open cowl flaps before taxiing.

(2) Move propeller controls to full "INCREASE RPM."

(3) Make a normal landing in mud or sand, holding the airplane straight by use of the rudder with minimum use of the brakes. This action minimizes the possibility of skidding, which may occur on a slick surface.

22. STOPPING ENGINES.

a. To stop engines, proceed as follows:

(1) Set propeller controls at full "INCREASE RPM."

(2) Prior to stopping the engines after the last flight of the day, run the engines at a speed of 800 to 1000 rpm and shift the supercharger controls from "LOW" to "HIGH" at 30-second intervals for a period of 5 minutes. This procedure serves to wash out any sludge which may have accumulated in the supercharger clutches. Lock the supercharger controls in "LOW."

(3) Idle at 800-1000 rpm to cool engines.

(4) When a cold weather start is anticipated, dilute the engines at 1000 rpm for the time indicated below, consistent with the lowest expected air temperature.

TEMPERATURE °C	TIME—MINUTES	MAX. ALLOW. CYL. HEAD	TEMP. °C OIL
−6 to −18 (+20° to 0°F)	3	150	50
−18 to −29 (0° to −20°F)	5	145	45
−29 to −40 (−20° to −40°F)	7	140	40
−40 to −51 (−40° to −60°F)	11	140	40

At the completion of the above dilution period, run both engines up to 1500 rpm, continuing dilution, and operate each propeller governor through three complete cycles. Release dilution switch and decrease engine speed. Stop engines and install engine covers.

Note

If temperatures approach limits during 1000 rpm dilution, shut down for 10-15 minutes to cool engine; then start engine and finish dilution procedure.

(5) Run engines at 1200 rpm for not more than 30 seconds to permit efficient scavenging of crankcase oil; then move mixture controls to "IDLE CUT OFF." Do *not* move mixture controls from "IDLE CUT OFF."

23. BEFORE LEAVING PILOT'S COMPARTMENT.

a. After engines stop, proceed as follows:

(1) Turn "OFF" all switches.

(2) Set parking brakes.

WARNING

Do not set parking brakes while they are hot.

(3) Fasten landing gear control lock.

(4) Lock flying controls.

(5) When engine is sufficiently cool, close cowl flaps.

(6) On early airplanes only, place carburetor air controls in "ICING" position.

(7) If airplane is not to be serviced by ground crew, lock all entrance hatches upon leaving airplane.

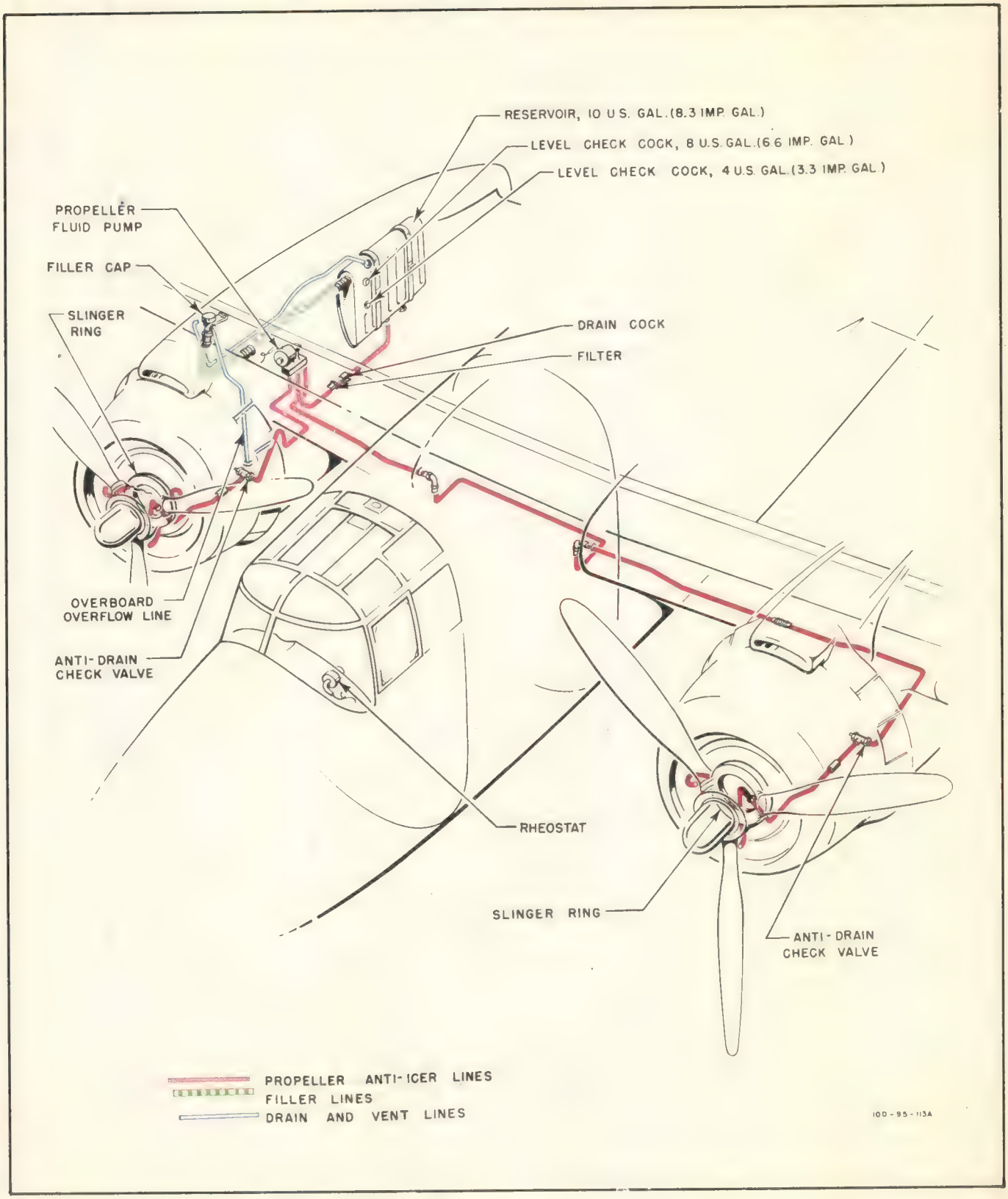

Figure 45—Propeller Anti-icer System

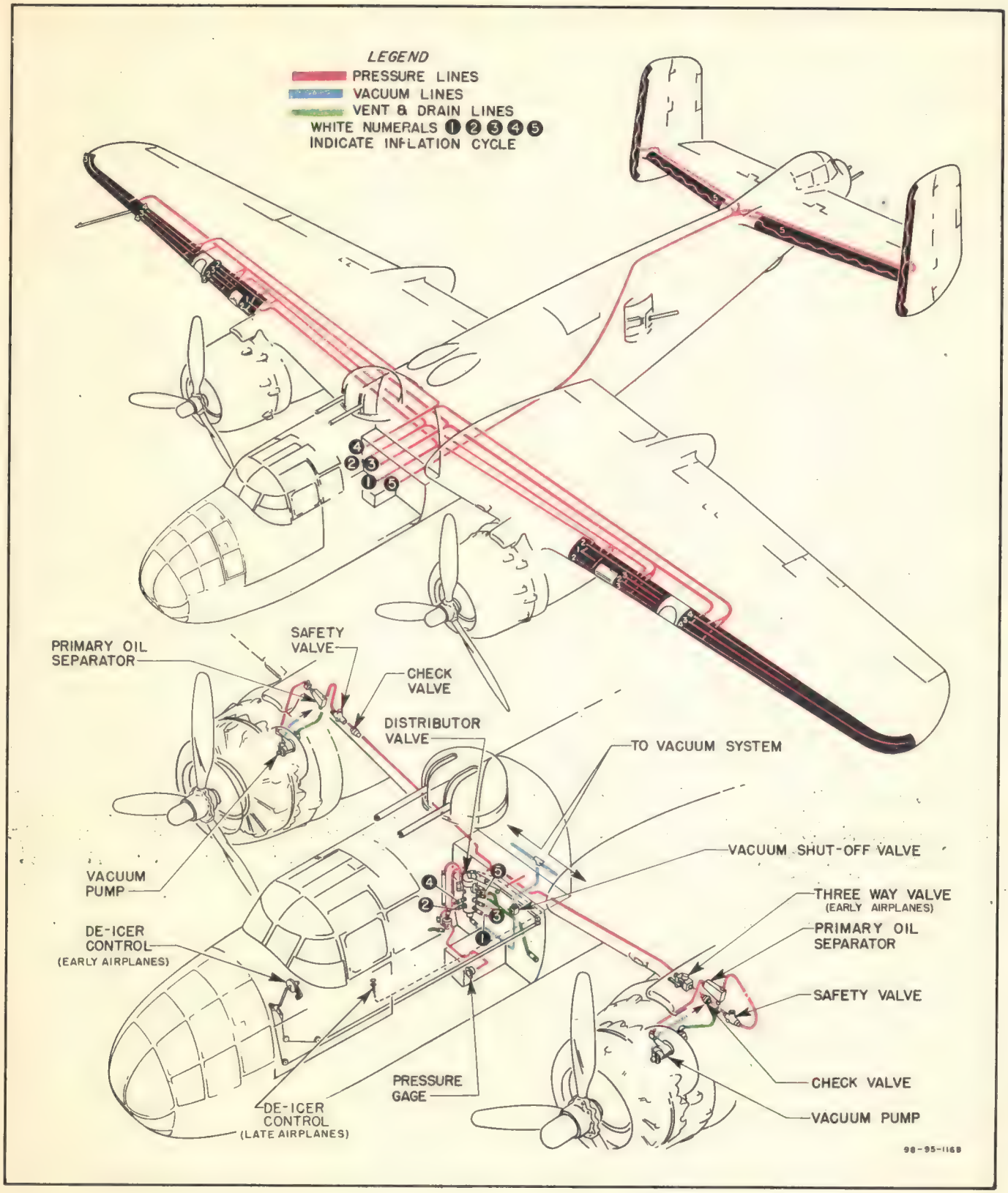

Figure 46—Surface De-icer System

opens a valve which permits oxygen to flow through the regulator, where it mixes with free air in an amount governed by a bellows-type valve in accordance with the barometric pressure. The oxygen is thus diluted by free air, in inverse proportion to the altitude, in order to conserve the supply. A control enables the user to close the air intake port and render the automatic mixing mechanism inoperative; pure oxygen then flows to the mask as required by the inhalation. An emergency valve on the unit allows the oxygen to by-pass the regulator; the valve is controlled by a red knob. The Type A-12 regulator which may also be used is similar in design to the AN-R-5, and contains all of the above-mentioned features.

(5) PRESSURE GAGE.—A Type K-1 gage indicates the oxygen supply by denoting the pressure within the cylinder. The dial is calibrated to show pounds per square inch pressure in 50-lb. graduations from 0 to 500.

(6) MASK TUBE.—An AN6003-2 low-pressure tube assembly conducts the oxygen mixture from the regulator to the mask intake tube. The mask end is provided with a jaw-type stowage clamp, and the other end is clamped to the regulator adjustable elbow.

(7) MASK.—The portable unit is designed for use with A-9, A-10, or A-10-A type oxygen masks. A correctly fitted mask of the proper type is extremely important.

b. OPERATING INSTRUCTIONS.—Normal operation of the portable oxygen system is automatic. If the mask is correctly fitted and the system is tight and in proper condition, the user's breathing will set the system in operation and release the right mixture of oxygen for the altitude at

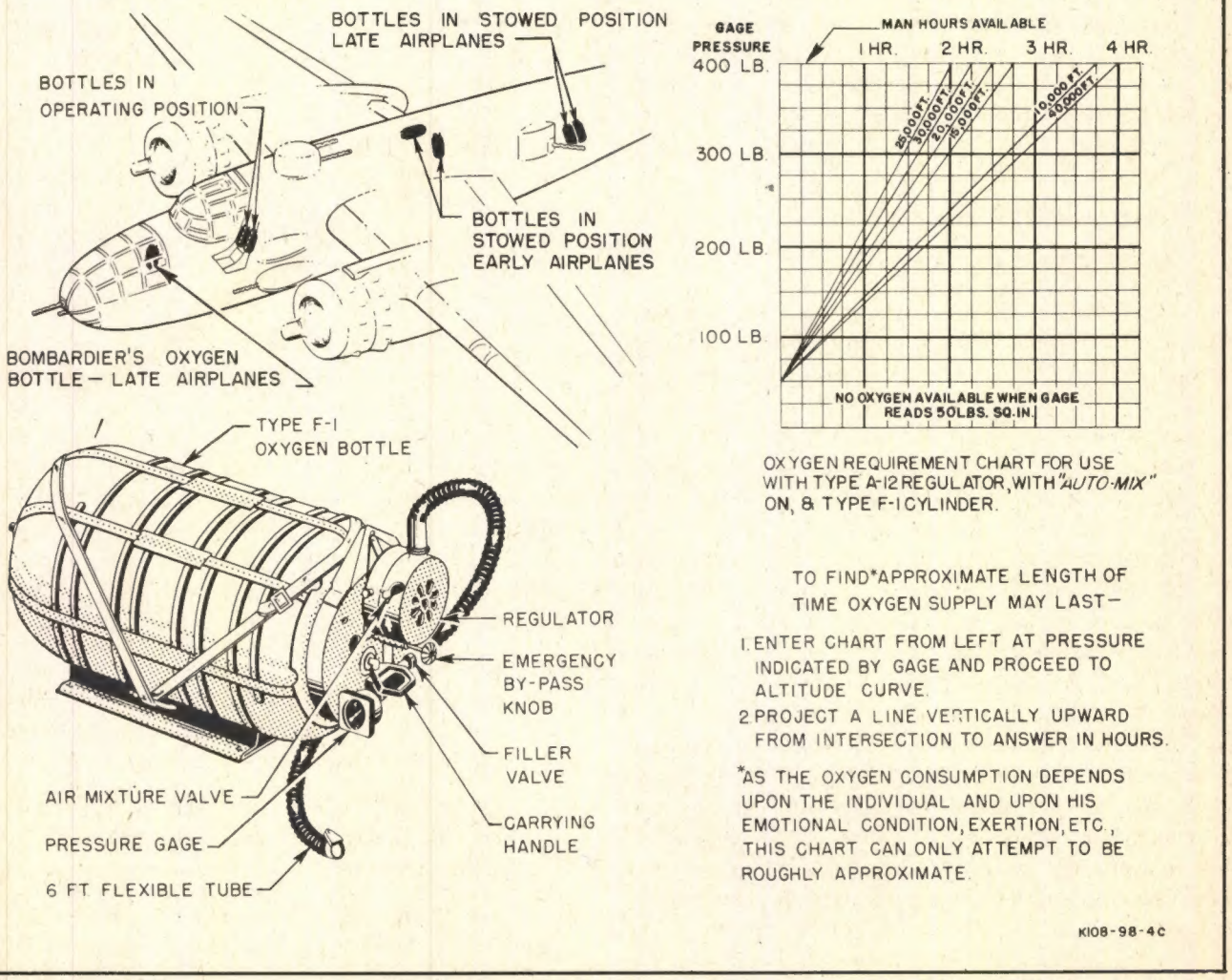

Figure 58—Portable Oxygen Unit

which the unit is being operated. If the mixture valve does not function properly, it may be turned off by turning the thumb lever on the regulator. This will allow pure oxygen to flow to the mask as required by the inhalation of the user. If failure of other parts of the regulator is suspected, the entire regulator mechanism may be by-passed by turning the red emergency knob in a counterclockwise direction. However, for normal operations, the automatic mixture valve must be turned on and the emergency by-pass knob turned off, in order to conserve the oxygen supply. The six-foot flexible tubes allow freedom of movement for the pilot and copilot.

WARNING

Before taking off, flying personnel should make sure that sufficient oxygen is provided for the projected flight and that the masks are of the correct type and fit. It is also important that the entire system be free from oil and grease at all times. If oil or grease comes in contact with any part of the equipment, it should be wiped off immediately. Failure to do this may result in an explosion.

8. MISCELLANEOUS EQUIPMENT.

a. INTERPHONE EQUIPMENT.

(1) DESCRIPTION. — The interphone equipment, RC-36, includes an amplifier, a dynamotor, one jack box for each interphone station, one microphone (throat type) for each crew member, and one low impedance headset for each crew member. A low impedance adapter is installed at each interphone station, the stations being located as follows: The pilot's interphone jack box is mounted on the left side of the pilot's compartment just aft of the instrument panel. The copilot's interphone jack box is mounted on the right side of the pilot's compartment aft of the radio compass control box. The bombardier's interphone jack box is mounted on the right side of the bombardier's compartment just below the window. The upper turret operator's jack box is mounted on the upper right side of the upper turret gunner's compartment opposite the upper turret column. Two gunner's jack boxes are installed in the aft section, forward of each waist gun window. The radio operator's jack box is adjacent to the liaison radio on the left side of the fuselage. The rear turret operator's jack box is mounted on the left side of the airplane opposite the tail gunner's seat.

(2) OPERATION.—The interphone jack box has five selective positions marked on the face of the box:

(a) Position 1 marked "COMP." In this position the audio output of the radio compass only will be heard.

(b) Position 2 marked "LIAISON." In this position the liaison receiver will be heard by all crew members. Only the pilot, copilot, and radio operator can transmit with their jack boxes. On airplanes with SCR-522-A radio equipment, all interphone jack boxes, with the exception of the radio operator's, have had the word "LIAISON" removed, and "VHF" substituted.

(c) Position 3 marked "COMMAND." In this position the command receiver output and sidetone of the command transmitter will be heard, and the microphone push-to-talk switch operates the command transmit-receive relays. The microphone will modulate the command transmitter when the push-to-talk switch is closed and the transmitter control box is in the "VOICE" position.

Note

In the above three positions, a limited control over the volume can be had by turning the increase-output knob.

(d) Position 4 marked "INTER." All jack boxes turned to this position provide an intercommunication system between crew members. The microphone is connected to the input of the interphone amplifier and the headphones to the output of the same amplifier. The volume control is not effective in this position.

(e) Position 5 marked "CALL." This is an emergency call position in which all of the positions of all jack boxes are placed in parallel across the output of the interphone amplifier. Should an emergency arise in which a crew member wishes to call an interphone station in use, he may do so by switching his jack box to "CALL." The microphone is connected to the input of the interphone amplifier. This position is effective at all interphone stations. The handle must be held in the "CALL" position as it is spring-loaded to return to the "INTER" position.

b. SEATS.

(1) BOMBARDIER.—The bombardier's riding seat has a padded cushion attached to the seat and to the back. This seat has been deleted on late airplanes.

(2) PILOT.—The pilot's seat is adjustable, both vertically and horizontally. The back cushion is filled with kapok, and may be used as a life preserver.

(3) COPILOT.—The copilot's seat has a low back and a seat cushion. It can be adjusted both horizontally and vertically. On late airplanes, the copilot's seat is identical to the pilot's seat.

(4) UPPER TURRET GUNNER.—A riding seat is provided on the right side of the upper turret gunner's compartment. The seat folds up flat against the ammunition boxes and clear of the front entrance hatch. A leather strap holds the seat in the stowed position. In combat, the gunner sits on a folding-type bicycle seat attached to the turret column.

(5) RADIO OPERATOR—WAIST GUNNER.—A cushioned folding seat is provided on the right side of the aft compartment for use when operating the radio equipment and is also used as a riding seat. A footrest is also provided at this station.

(6) TAIL GUNNER.—A seat identical to the radio operator's on the left side of the aft compartment is used as a riding seat. The seat has been moved to the right side of the aft compartment on late airplanes. In combat, the tail gunner sits on a bicycle-type seat in the tail turret station.

c. SAFETY BELTS.—All seats, except the upper turret gunner's seat, are provided with safety belts.

d. RELIEF TUBES.—Relief tubes are installed in the pilot's compartment just to the left of the pilot's seat, and on the right side of the aft compartment.